



TITLE:

On the Leaching of Domestic Chromite Ore in Sulfuric Acid

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ABSTRACTS

microdiffraction by Suito and Uyeda. The interplanar spacings of α -form copper-oxinate 2 hydrate calculated from X-ray diffraction patterns accord with the Hull and Daveys diagram for tetragonal system at the position of about 1.6 for c/a value. The interplanar spacings calculated, by assuming the cell constants as $a=b=6.57\text{\AA}$, $c=15.56\text{\AA}$ and $\alpha=\beta=\gamma=90^\circ$, agreed with the above experimental results with accuracy of 1%.

It is concluded that α -form copper-oxinate 2 hydrate, which precipitates from the solution, transforms into stable β -form, in the same way as in the case of copper-phthalocyanine.

On the Leaching of Domestic Chromite Ore in Sulfuric Acid

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Transaction of the Mining and Metallurgical Alumni Association (Suiyo-Kwaishi),

13, 265 (1957)

To obtain a pure chromic sulfate electrolyte for the production of metallic chromium, the leaching conditions of a domestic ore (48.7% Cr_2O_3 and 12.6% FeO) in sulfuric acid containing small amount of $(\text{NH}_4)_2\text{Cr}_2\text{O}_7$ were studied.

Sample : The chromite ore from Numaoshi in Hokkaido was crushed by a Engelbach crusher, and sieved by a standard Tyler sieve.

Operation : Crushed ore was digested in 300-ml. porcelain beaker under atmospheric pressure, or in a 2-l lean-lined autoclave under high pressure. A mixed solution of sulfuric acid and $(\text{NH}_4)_2\text{Cr}_2\text{O}_7$ was used as leaching solution. After leaching the liquor was filtered. The amounts of Fe and Cr in the filtrate and precipitate were analysed.

Items of experiments :

Table 1. Optimum leaching conditions of Numaoshi chromite.

Leaching conditions	Under atmospheric press.	Under high press		
Size of ore (mesh)	-200	-200		
Conc. of H_2SO_4 (%)	70~80	60	40	20
Leaching temp. ($^\circ\text{C}$)	150~170	150	170	190
Pressure (kg/cm^2)	---	3	7	11
Leaching time (hr)	>2	---	>4	---
Weight ratio of H_2SO_4 to ore	6.6	---	3	---
Weight ratio $(\text{NH}_4)_2\text{Cr}_2\text{O}_7$	0.15~0.20	0.15~0.20		
Extraction of Cr (%)	90	90		

ABSTRACTS

Effects of leaching conditions on the extraction of chromium were studied.

1. Size of ore, 2. Leaching time, 3. Amount of $(\text{NH}_4)_2\text{Cr}_2\text{O}_7$ added, 4. Leaching temperature, and 5. Amount of charge.

Summary of Result : Results obtained are summarized in Table 1, which shows the optimum conditions for extraction of chromium.

If the acid concentration was increased up to 60%, insoluble brownish-yellow precipitate was formed in the presence of $(\text{HN}_4)_2\text{Cr}_2\text{O}_7$ in both cases of leaching.

Reaction of *n*-Hexyl Bromide with Potassium Fluoride in Several Glycols

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J. Chem. Soc. Japan. Ind. Chem. Sec. (Kōgyō Kagaku Zasshi), **60**, 272 (1957)

Reactions of *n*-hexyl bromide with potassium fluoride in isomeric propanediols and butanediols are studied. *n*-Hexylfluoride is obtained in high yields by the use of such glycols that have two adjacent hydroxy groups in the molecule. Two geometrical isomers of 1,2-cyclohexanediols are used as the solvent. The yield of *n*-hexyl fluoride is ca. 30% in the *trans* isomer, whereas it's only 2% in the *cis* isomer.

Nitration of Desoxybenzoin

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J. Org. Chem., **22**, 288 (1957)

The reaction routes of desoxybenzoin with nitric acid ($d=1.30$) were studied by using C^{14} -tracer technique. By the nitration of desoxybenzoin-carbonyl- C^{14} (I) ($12.95\mu\text{c}/\text{m.mole}$) there were obtained *p*-nitrobenzil-carbonyl- C^{14} (II) ($12.92\mu\text{c}/\text{m.mole}$), benzil-carbonyl- C^{14} (III) ($12.96\mu\text{c}/\text{m.mole}$), inactive *p*-nitro-benzoic acid (IV) and benzoic acid-carboxyl- C^{14} (V) ($11.29\mu\text{c}/\text{m.mole}$). When treated with alcoholic potassium hydroxide, II decomposed into inactive *p,p'*-azoxydibenzoic acid, inactive *p*-nitrobenzoic acid and benzoic acid-carboxyl- C^{14} ($12.96\mu\text{c}/\text{m.mole}$). These facts indicate that the nitration occurs at the *para* position to the methylene group of I.

The non-labeled specimens of *p*-nitrodesoxybenzoin, *p*-nitrobenzil, and benzil were treated with the nitric acid, respectively. *p*-Nitrodesoxybenzoin gave benzoic acid, *p*-nitrobenzoic acid, and *p*-nitrobenzil. Benzil and *p*-nitrobenzil, however, were resistant to nitration and oxydation, and were recovered without loss. The specific activity of V is comparatively lower than the theoretical value. These results would lead to the following conclusions. In the action of the nitric acid on desoxybenzoin-carbonyl- C^{14} , the *p*-nitrodesoxybenzoin-carbonyl- C^{14} is formed as an intermediate, and its methylene group is oxidized to *p*-nitrobenzil-carbonyl- C^{14} . While oxidative disruption of the same intermediate gives benzoic acid-carboxyl- C^{14}